Incidence rates of reported work health & safety incidents & injuries in part-time & full-time Australian Army personnel

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Incidence rates of reported work health & safety incidents & injuries in part-time & full-time Australian Army personnel

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Introduction

- Internationally, Reserve personnel a critical element of military forces
- Often comparable duties to full-time personnel
- Little known of comparative WHS incident & injury incidence rates
- Injuries have substantial implications for the individual, & for personnel availability, operational casualty rates, budgets & more
- In Australia, the Defence Health Status Report (2000) indicated a recorded injury rate per 100 FTE military personnel 3 times as high in Reservists as in FT personnel
- No other similar research found, at a Force or Service level, internationally.





Introduction

- Key further issue: injury definition & threshold for reporting
- Injury prevention efforts much more successful if reporting threshold low:
  - Greater statistical power to detect emerging issues in a timely manner
  - Actions to address near misses, dangerous occurrences & minor injuries reduce likelihood of escalating to more serious injuries & deaths
  - Latter only possible if near misses, dangerous occurrences & minor injuries routinely reported, considered, acted upon





Introduction

- Valuable to examine reporting rates as an indicator of surveillance system utility
- Other indicators of system utility (Mckinnon *et al.* 2009):
  - efficient, routine & multi-purpose inputs
  - system outputs
  - achievements in timely detection & remediation of emerging injury problems
  - feedback loops
- Reporting rates inextricably linked to these latter indicators – those supplying & entering data will not do so reliably unless these indicators addressed (McKinnon *et al.* 2009)

Aims

1. To investigate & compare the incidence rates of WHS incidents & injuries in ARES & ARA populations, reported in the WHSCAR database

2. To compare these *injury* incidence rates to injury rates reported by other injury surveillance systems for comparable army populations

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Methods

- Retrospective cohort study, covering 2-yr period 01 Jul 2012 – 30 Jun 2014
- Ethics approval from ADHREC (LERP14-024) & BUHREC (RO1907)
- Abstract approved for presentation by JHC (150707)
- Incident data for ARES & ARA extracted from WHSCAR database by system administrators, & made non-identifiable before supply to research team
- Population sizes ascertained from annual Defence *Agency Resources & Planned Performance* reports
- Total annual numbers of ARES days served provided by AHQ

Methods

- Incidence rates for WHS incidents & injuries reported by the ARES & ARA populations in the 2-year study period calculated:
  - *per capita*
  - *per FTE (accounting for actual days served: assumed 1.0 FTE = 232 days)*
- Incident rate ratios (IRR), ARES: ARA, calculated for reported WHS incidents & reported injuries, based on *per FTE* rates
- Finally, ARES & ARA *injury* incidence rates compared descriptively with incidence rates derived from other systems for similar populations

Results

ARES and ARA Population Sizes 2012-2014

	ARES	ARA	Whole of Army
2012 - 2013	14867	28955	43822
2013 - 2014	15200	29847	45047
Mean pop. 2012-14	15034	29401	44435

Results

ARES & ARA estimated person-years* of active service 2012-2014

	ARES	ARA	Whole of Army
2012 - 2013	2296	28955	31251
2013 - 2014	2405	29847	32252
Total pers-yrs 2012-14	4701	58802	63503

*One person-year of active service nominally estimated equivalent to 232 days of active service:
365d – 104d weekends (or 'in-lieu' non-service days) – 20d AL – 9d public hols

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Results

Incidence rates & IRR for reported *WHS incidents*, by Service type

(WHS incidents per 100 soldiers per year [per 100 person-years of active service])

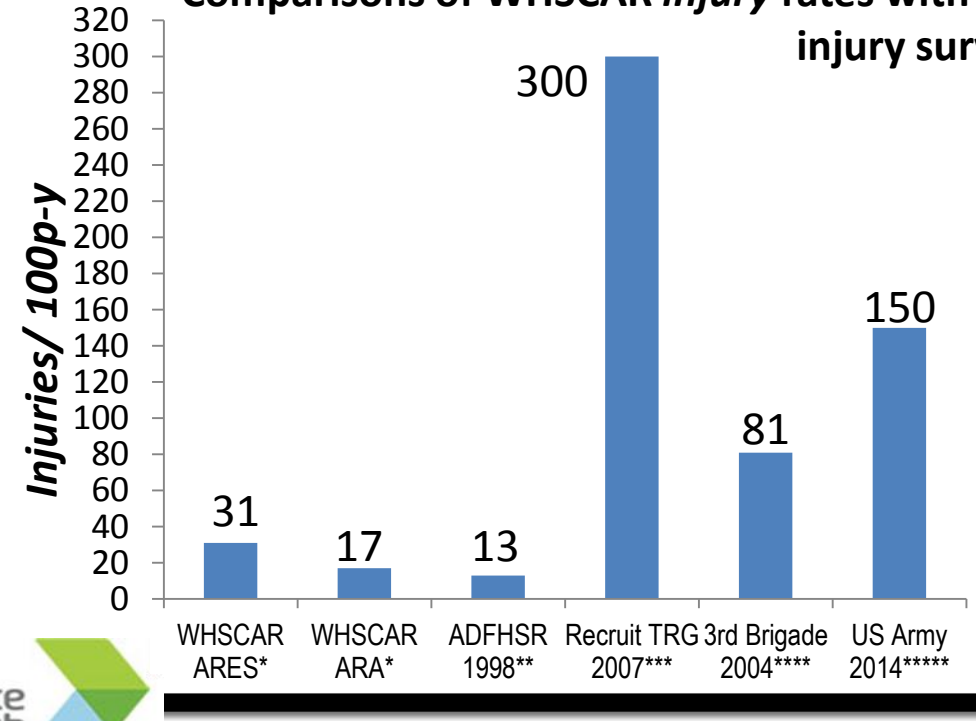
WHS incident type	ARES	ARA	IRR (ARES: ARA)
Minor personal injury	4.55 [29.10]	15.58 [15.58]	[1.87; 95% CI 1.78-1.96]
Exposure	0.29 [1.83]	5.17 [5.17]	[0.35; 95% CI 0.29-0.44]
Serious injury or illness	0.22 [1.40]	1.14 [1.14]	[1.24; 95% CI 0.96-1.59]
Dangerous occurrence	0.19 [1.23]	0.86 [0.86]	[1.43; 95% CI 1.09-1.87]
Near miss	0.04 [0.23]	0.15 [0.15]	[1.51; 95% CI 0.81-2.82]
Fatality	0.01 [0.04]	0.02 [0.02]	[2.78; 95% CI 0.60-12.9]
Total	5.29 [33.84]	22.91 [22.91]	[1.48; 95% CI 1.42-1.54]

Results

Incidence rates & IRR for reported *injuries*, by year and Service type
(Injuries per 100 soldiers per year [per 100 person-years of active service])

Years	ARES	ARA	IRR (ARES: ARA)
2012-2013 (1 year)	4.76 [30.84]	16.49 [16.49]	[1.85; 95% CI 1.72-2.00]
2013-2014 (1 year)	4.78 [30.19]	16.93 [16.93]	[1.80; 95% CI 1.67-1.93]
2012-2014 (2 years)	4.77 [30.50]	16.72 [16.72]	[1.82; 95% CI 1.74-1.91]

Comparisons of WHSCAR *injury* rates with *injury* incidence rates recorded by other injury surveillance systems, in similar populations



*Current study

**ADF Health Status Report (2000) – DEFCARE dataset

***Goodall R, Pope R, Coyle J & Neumayer, R (2012). Balance and agility training does not always decrease lower limb injury risks: a cluster-randomised controlled trial. *International Journal of Injury Control and Safety Promotion,* 20 (3), 271-281

**** Rudzki SJ & Pope R (2006). Injury reductions seen in an infantry brigade using the Australian Defence Injury Prevention Program. *Medicine & Science in Sports & Exercise,* 38 (5), p. S348

***** https://www.afhsc.mil/Reports/InjuryReports

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Discussion

- The rates of reported incidents recorded in the Defence safety & compensation incident reporting system (WHSCAR) observed in this study of the period 2012-2014 were just slightly higher than the rates observed for FY 97/98 (Defence Health Status Report).
- The rates were much lower than rates recorded in available point-of-care injury surveillance systems
- It is impossible to tell whether observed differences between ARES & ARA in WHS incident & injury risks are real differences or simply differences between the populations in reporting thresholds & rates – the latter is likely.





Discussion

- Point-of-care injury surveillance systems have consistently demonstrated much higher incident & injury reporting rates than safety & compensation reporting systems, where reporting is generally not directly tied to care.
- However, point-of-care systems do not readily detect some types of WHS incidents, such as dangerous occurrences & near misses.
- Higher WHS incident & injury reporting rates & lower reporting thresholds increase the volume of incident data & so increase statistical power to detect emerging problems early & prevent escalation to more serious incidents & injuries.





Discussion

- There remains an opportunity to very substantially enhance WHS incident & injury surveillance & control in the military context using:
  - hybrid, integrated approaches which ensure injuries & near misses etc are detected
  - multi-purpose data collection & entry systems to gain efficiencies (McKinnon *et al.* 2009)
  - smart systems which monitor emerging trends in real time against established control parameters & push alerts to commanders when but only when appropriate
  - purpose-designed response mechanisms activated when problems are detected
  - feedback loops to key stakeholders & especially data providers & data collection/ entry staff (McKinnon *et al.* 2009)
  - command incentives for prioritisation (not for low rates! (van der Schaaf & Kanse 2004))

Discussion

- Such developments would markedly reduce actual WHS incident & injury rates, thus increasing personnel readiness & availability, as multiple demonstrations have shown.
- Such changes would greatly benefit ARA, ARES & other ADF Services alike.





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Questions

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